Canada's new hog carcass valuation system

Prepared jointly by

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Information division

CANADA'S NEW HOG CARCASS VALUATION SYSTEM

The Canada Department of Agriculture implemented a new system of valuing hog carcasses on December 30, 1968. Grades A-B-C were replaced by an index based on the concept of appraising carcass merit as predicted by backfat and weight.

The new system gives a greater reward to the producer who markets hogs that yield a relatively high proportion of lean.

The longer term result should be an increase in production of higher quality pork.

The new hog valuation policy is the outcome of several years' effort by producers working in close co-operation with the processing industry and government. And it has the enthusiastic backing of all three groups.

WHY WAS A CHANGE NECESSARY?

The A-B-C grades system did not compensate for individual carcass value as accurately as it might.

There was considerable variation in yields (and therefore in value) of hogs falling within the same grade and also an overlapping between grades.

There was a need for more definitive predictions of commercial value. Therefore more categories were required.

There is a growing consumer demand for leaner cuts. Unwanted excess fat must be trimmed off and this adds costs which affect both consumer and producer.

Other countries, particularly the United States, are making rapid progress in hog quality improvement. If Canada is to maintain leadership or improve its competitive position in quality pork production, we must continue to make advances in hog breeding, feeding, management, and merchandising.

Pork, of late, has been losing ground in the competition for the consumer's dollar. The product's share of the meat market has been declining.

HOW THE NEW POLICY WAS DEVELOPED

For a number of years, all segments of the industry had been aware that some change in the grading system would be beneficial. The problem was to come up with changes that would be advantageous to producer, packer, government, and consumer.

Impetus for change came in 1964 when producers, through the Canadian Federation of Agriculture, convened the National Swine Improvement Conference in Montreal.

The conference, attended by producers, animal scientists, processors, retailers, consumers, and government officials, agreed that changes were necessary if the Canadian swine industry was to realize its full potential.

Following the conference, a committee of producers from across Canada, working with scientists, meat packers, and government officials, pursued the recommendation for study that hopefully would lead to a new grading system.

A number of research projects were undertaken by the Canada Department of Agriculture in co-operation with the Meat Packers Council of Canada, a national trade association of packers and processors.

For instance, a study in 1965, involving 61,138 carcasses related backfat measurements and weights to grades and tested the feasibility of taking two backfat measurements in normal plant operations.

Another cut-out test was conducted in 1966 on 930 carcasses to assure that yield of boneless hams and loins could be predicted from backfat measurements.

The research indicated that the measurement of total backfat is a more accurate indicator of carcass yield than is length or carcass weight; that there

was considerable variation in the yields of hogs falling within the same grades (A, B or C) and that there was an overlapping of yields between grades; that the yield of carcasses can be adequately predicted from the total of two specific backfat measurements; and that it is practical and feasible to undertake such grading procedures in the regular operations of packing plants.

At the third producers' conference, convened by the Canadian Federation of Agriculture in Ottawa in 1966, delegates agreed to the adoption of this new yield prediction concept in hog carcass appraisal. This meeting saw the formation of the Canadian Swine Council, a body which is national in scope, representing hog producers' organizations throughout the country. The Swine Council was empowered to work on behalf of producers with the processing industry to develop a new rating system for hog carcasses.

After joint meetings between the Canadian Swine Council and the Meat Packers Council of Canada it was acknowledged that the industry was reluctant to accept new carcass grading and evaluation procedures without further verification on specific points.

To answer these questions, a further very comprehensive research project was carried out by the CDA's Livestock Division in 1967 in co-operation with the Meat Packers Council and animal scientists.

This study verified that total backfat is a reliable indicator of yield; that the same fat to yield relationship exists across all weight ranges; and that differences between regions in Canada are not significant.

In September 1967, the Canadian Swine Council and the Meat Packers Council of Canada met in Montreal to review and discuss the first release of results of the hog carcass research project. Over the next eight months representatives of the two Councils worked together formulating a new hog carcass evaluation system, based on the mass of research data.

Following detailed study and consultation between producers and packers and assisted by scientists, a method was worked out for compensating producers for carcass merit, taking into account value differences due to yield and weight of individual cuts. This method is embodied in the "Table of Differentials" which evolved through the following steps:

(a) A series of percentage yield predictions of trimmed product per 100 pounds of warm carcass weight was developed by research scientists for the various ranges of backfat. A system of classifying hogs on this basis was recommended by the Canadian Swine Council to the processors through the Meat Packers Council.

(b) Detailed study of the proposal by the meat packing industry indicated that warm carcass weight has a bearing on the actual commercial value of the trimmed cuts (that is, the carcass weight has an influence on the size of the cuts and size of cuts is important in merchandising). It also has a bearing on the processing cost of the trimmed product. (For example, a heavy cut nets more lean than a lighter one, yet the trimming of the two costs about the same.) Thus, although carcass weight is not a yield factor, it does affect the commercial value of the hog carcass.

(c) Taking into account this additional information, a new formula was worked out by research scientists incorporating carcass weight and backfat. Using this equation a value-yield table was developed by correlating the 14 backfat categories and 6 weight categories.

(d) A series of value-yield indices were computed which make up the Table of Differentials. (See page 5) This was done by giving an index figure of 100 to the value of carcasses in the weight range of 150 to 159 pounds and in the 3.2 to 3.3 inches of backfat range, and then calculating all other carcass value-yields as a percentage relative to the base of 100.

PRESENTATION TO GOVERNMENT

In May 1968, the two Councils jointly presented a detailed proposal for revision of the hog grading system to the Canada

Department of Agriculture. The Department accepted the proposal and took immediate steps to implement the new hog carcass valuation system. Target date for the change was set at December 30, 1968.

The switchover to the new system involved hiring and training additional Livestock Division staff as well as retraining present staff. A complete change in grading, settlement, and market reporting forms was required. The hog carcass grading regulations were completely revised. Killing floor alterations and modifications were also necessary.

HOW THE SYSTEM WORKS

The Canada Department of Agriculture continues to measure and appraise carcass merit and supervise weighing.

Hogs are measured and appraised on the rail and payment is made on the basis of warm carcass weight.

The main difference in the new rating system is that total backfat and weight determine the index (where there are no demerits) and thus the value of the carcass.

Total backfat is the sum of *maximum depth of shoulder fat plus maximum depth of loin fat.* All measurements are taken to the nearest *tenth of an inch.*

Hogs, whose warm dressed weight is between 125 and 180 pounds are placed in one of 13 index categories. Other value-yield categories have been established for light carcasses (90 to 124 pounds); heavy carcasses (181 to 195 pounds); extra heavy carcasses (196 pounds and over); and for ridglings.

The Table of Differentials on page 5 is the key to the new valuation system. The index figures in the table are the result of exhaustive tests conducted on hog carcasses over the past three years.

The first column shows the total of two backfat measurements.

The second column shows the percentage of predicted yield associated with each backfat category. This should be useful to breeders interested in making improvement in their breeding program. Across the top of the table are the ranges of warm carcass weight.

At the present time Canadian hog carcasses average approximately 154 pounds warm carcass weight (excluding sows and stags). Tests carried out in developing the new grading system showed that the average total backfat of A and B grade carcasses was 3.2 inches. Reading across from the backfat measurement and down from the carcass weight we see that the index for a 154 pound carcass with total backfat of 3.2 to 3.3 inches is 100 and might be termed an "average" hog.

As total backfat decreases the differential index increases and conversely as backfat increases the index decreases.

Each of the figures within the table is an index or a percentage change of the value per pound of carcass, which ranges up and down from 100.

Market bids for hogs are made on a warm dressed weight basis and *the bid price applies to those carcasses with an index of 100.* A carcass with an index of 110 is worth 10% more per pound than the bid price, and one scoring an index of 90 is worth 10% less per pound. Thus, the bid price per pound is adjusted accordingly in the Table of Differentials.

From the table it will be noted that:

Lighter weight carcasses—i.e., under 125 lbs., regardless of amount of backfat have an index of 87 and thus are paid for on the basis of 13% under the bid price.

Carcasses in the 125-180 lbs., range depending on fat and weight have indices ranging from 88 to 112 – thus a 24% range in value per pound.

Heavier carcasses – over 180 lbs. – have 4 indices.

Ridglings all have a value index of 67 – i.e., 33 points off the "bid" price.

The column headed "Predicted Yield" is the yield prediction based only on backfat measurement and is unadjusted by a weight or value. It is provided so that producers can relate the predicted yield of the five trimmed primal cuts on their commercial hogs to yield predictions obtained from backfat probing or from R.O.P. records of breeding stock.

TABLE OF DIFFERENTIALS

Backfat in.	Predicted yield	POUNDS 90 — 124	125 — 129	130 — 139	140 — 149	150 — 159	160 — 169	170 — 180	181 — 195	196 and over	Ridgling
– 1.9	69.7%	87	105	109	110	112	112	112	91	85	67
2.0 - 2.1	69.0%	87	103	107	109	110	112	112	91	85	67
2.2 - 2.3	68.2%	87	102	105	107	109	110	110	91	85	67
2.4 - 2.5	67.5%	87	100	103	105	107	109	109	91	85	67
2.6 - 2.7	66.7%	87	98	102	103	105	107	107	91	85	67
2.8 - 2.9	66.0%	87	97	100	102	103	105	105	91	85	67
3.0 - 3.1	65.2%	87	95	98	100	102	103	103	91	85	67
3.2 - 3.3	64.5%	87	92	97	98	100	102	102	91	85	67
3.4 - 3.5	63.8%	87	88	95	97	98	100	100	91	85	67
3.6 - 3.7	63.0%	87	88	92	95	97	98	98	91	85	67
3.8 - 3.9	62.3%	87	88	88	92	95	97	97	91	85	67
4.0 - 4.1	61.5%	87	88	88	88	92	95	95	87	82	67
4.2 - 4.3	60.8%	87	88	88	88	88	92	92	87	82	67
4.4 - +	60.1%	87	88	88	88	88	88	88	87	82	67

As a tool for herd improvement these percentages may be used to supplement the Table of Differentials indices.

Type demerits due to:
- deficiency in the belly (less than a minimum thickness of ¾ inches at any point) on carcasses of 130-180 pounds.
- roughness (not requiring trimming on the kill floor) results in a decrease of *three* points in the index.

Note *Type demerit due to length* Joint studies will continue to determine if there is a minimum carcass length below which the yield of primal cuts is affected more than is accounted for by the present indices.

Quality Demerits due to:
- abnormal fat (soft, oily etc.)
- abnormal color and/or texture of lean results in a decrease of *ten* points in the index.

Hogs that weigh less than 90 pounds or any carcass that weighs more than 90 pounds, but which is lacking in general fleshing or is underfinished to the point of emaciation are scored 80 by the grader. The settlement form will be marked with a D to symbolize this condition of the carcass.

Trimmable demerits, of such a nature that a Health of Animals Inspector requires their removal before permitting the carcass to be processed, result in a reduction in weight by the amount of product removed. Deformities, pathological conditions (disease, injury, etc.), late castration, excess mammary development, skin condition, pigmentation, adhesions: *if clearly of farm origin* the actual weight removed is deducted from the warm dressed weight. The adjusted weight is the weight for settlement but the original unadjusted weight is used to determine the appropriate index.

Note Stags and sows are bought and sold according to market bids.

DEMERIT SYMBOLS

Type demerits are indicated by: H-ham; B-belly; S-shoulder, L-length; R-roughness (not requiring trimming on the killing floor).

Quality demerits are indicated by: O-abnormal fat (soft, oily, etc.); C-abnormal color and/or texture of lean (pale, watery or dark).

Trimmable demerits are indicated by: A-abcess; I-adhesions; E-arthritis; K-kidney conditions; G-late castrations; M-mammary tissue; N-rhinitis; H-skin conditions; P-skin diseases; F-fractures; T-tuberculosis; X-not otherwise classified.

VALUATION

Hogs are weighed and weights recorded on the scale ticket, under the supervision of the CDA's Livestock Division.

Federal graders take maximum backfat measurements on the shoulder and loin and record the total of the two backfat measurements on the scale ticket.

Livestock Division Staff note and record the type and quality demerits.

SETTLEMENT

With information on backfat and weight, the purchaser refers to Table of Differentials and:

(i) Selects the appropriate index from the table.

(ii) Multiplies the "bid" price by the index to get the value per pound for that carcass.

(iii) Multiplies that price by the actual warm dressed weight (providing there are no trimmable demerits) and thus arrives at the price to be paid for that carcass.

For example, if the bid price is $30.00 per cwt., the computation for a 150 lbs. carcass with a 2.5" backfat is:

(a) Index – 107

(b) 30 × 107 = $32.10

(c) $32.10 × 150 = $48.15

EFFECTS

The new system of valuation results in proportionately higher returns for hogs with a relatively high proportion of lean. Conversely there are lower returns for hogs with a relatively low proportion of lean. In other words, the new system does not increase the total amount paid for the total supply of hogs, although as the quality of hogs improves through use of the system the producer will gain by producing better hogs more economically. In addition, consumer acceptance of pork should improve. It does provide a greater spread in value between the top and bottom quality category than the old system, and the spread widens as the price of hogs rises.

For example, if a carcass weighing 150 lbs. (no demerits) is sold on a dressed weight basis at prices of $25.00; $30.00; and $40.00 per cwt.; the top to bottom spread is $9.00 at $25.00 cwt.; $10.80 at $30.00 cwt.; and $14.40 at $40.00 per cwt.

Index	*$25.00 cwt.*	*$30.00 cwt.*	*$40.00 cwt.*
112 (× $25.00 × 150 lbs.)	$42.00	$50.40	$67.20
100 (× $25.00 × 150 lbs.)	37.50	45.00	60.00
88 (× $25.00 × 150 lbs.)	33.00	39.60	52.80

The addition of a quality premium for high scoring carcasses further spreads the advantage in favor of quality production and results in a substantial incentive for the production of high quality carcasses.

Here are three examples of how demerits affect settlement price:

Example 1 Type demerit

Warm dressed weight 154 lbs.
Total backfat 2.2 – 2.3"
Basic index – 109
Type demerit – (Roughness) – 3 points
Adjusted index – 106
Calculation – 106 × bid price × 154

Example 2 Quality demerit

Warm dressed weight 154 lbs.
Total backfat 2.2 – 2.3"
Basic index – 109
Quality demerit – (soft, oily carcass) – 10 points
Adjusted index – 99
Calculation – 99 × bid price × 154

Example 3 Trimmable demerit

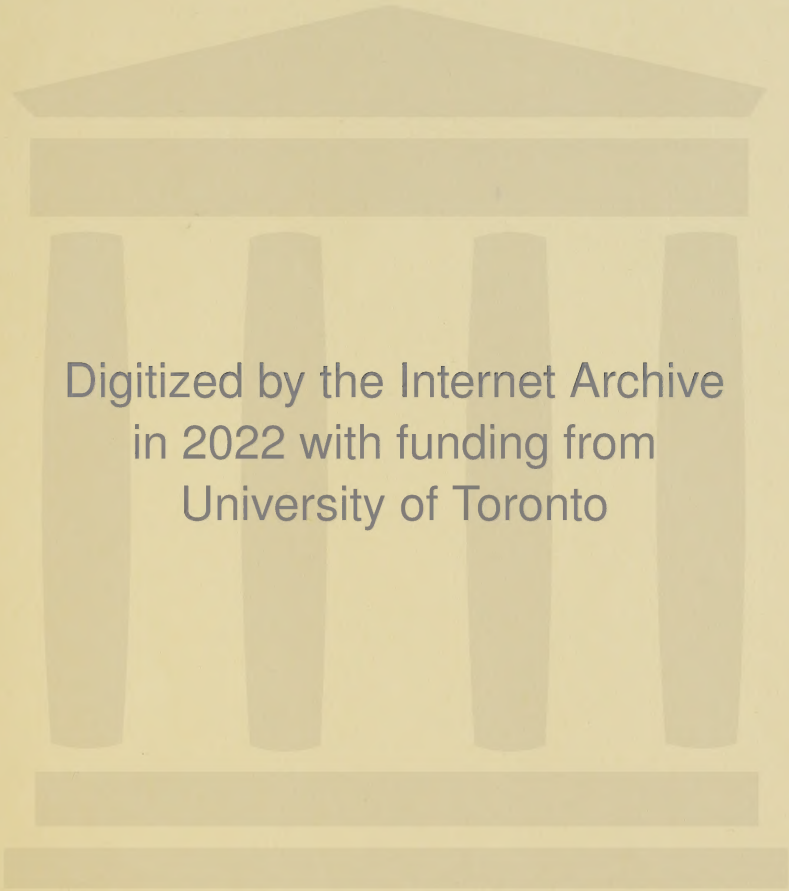
Warm dressed weight 154 lbs.
Total backfat 2.2 – 2.3"
Basic index – 109
Trimmable demerit – 6 lbs.
Settlement weight 154 – 6 = 148 lbs.
Calculation – 109 × bid price × 148

THE FUTURE

This valuation system clearly identifies desirable traits in hog carcasses. It gives producers more accurate information on the yield of lean meat of hogs they market.

The new policy provides better returns to the producers of exceptionally high quality pork and it provides lower returns to those who produce mediocre market hogs. This gives commercial producers an incentive to procure top quality breeding stock. An improved product should gain for pork an improved competitive position in the Canadian and export market.

The Canadian Swine Council and the Meat Packers Council of Canada continue to assess the results of the new system to ensure that the value-yield indices are as accurate as possible and to ensure that Canadian hogs continue to produce the kind and quality of cuts demanded by the market. The system can be readily amended, if it becomes advisable to do so, as new additional information becomes available.



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